1. Squaring Poland
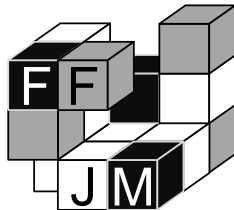**2. Reverse Polish Optimization**
3. Celebrity Boggle

This round consists of optimizer puzzles. For puzzles 1 and 3, you will have enough space to work on two possible solutions, but only one solution will be assigned a score. If you write in both areas, please mark very clearly which one contains your answer – otherwise we will choose one at random, not necessarily the highest scoring one.
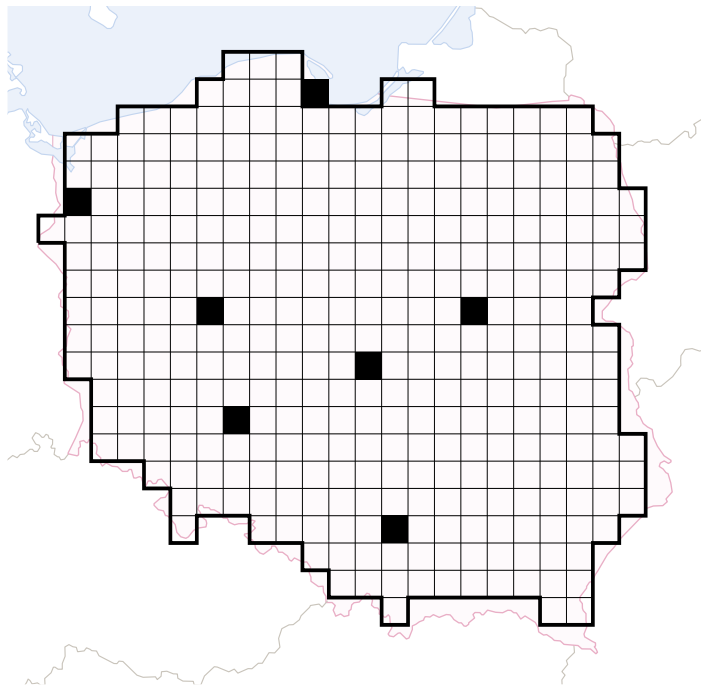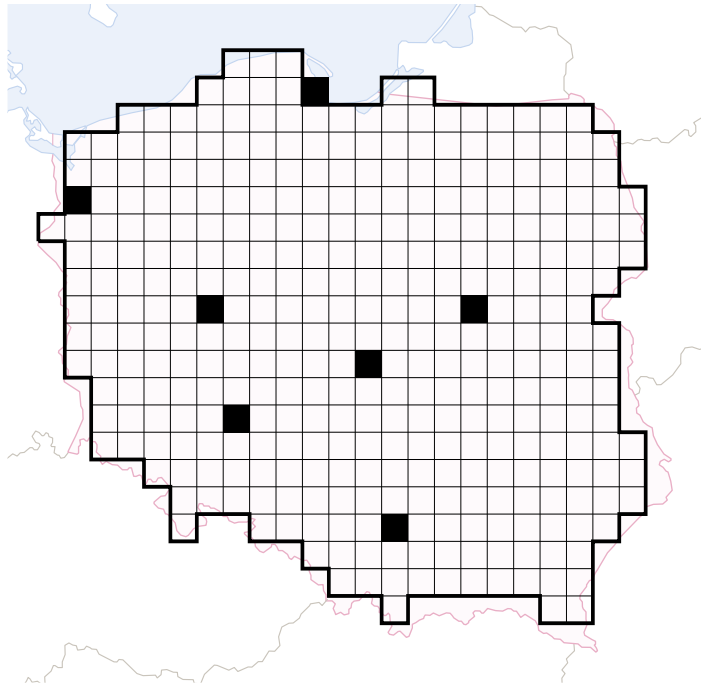
For each puzzle, the contestant(s) with the best solution among all participants will earn a bonus of 10 points.

1. Squaring Poland

Divide the map of Poland into the fewest number of squares. Your squares must follow the grid lines, and cannot include the black squares (representing the 7 largest cities of Poland).

Score: $5 \times (64 - N)$ where N is the total number of squares used. Any area of the map not divided into squares will be counted as the corresponding number of unit squares.

2. Reverse Polish Optimization

Starting from the given ordered list of numbers, perform one of the four elementary arithmetic operations ($+$, $-$, $\times$, $/$) on the last two numbers (in the given order: if the last two numbers are respectively a and b, you can only compute $a + b$, $a - b$, $a \times b$, or a/b). The two numbers are removed from the list, and the result of the operation is inserted in their place. Repeat the process until only one number remains: the final result. The ordering of the numbers cannot be modified at any step in the calculation. Your calculations may involve negative or non-integer values. Your goal is to get a final answer as close to 2010 as possible, but without exceeding 2010. List the arithmetic operations in the order they are to be performed.

Score: $(N - 1900)/2$, where N is your final answer (rounded to the nearest integer), if it is not more than 2010. Your score is 0 if your final answer is less than 1900 or more than 2010.

$$192 \quad 34 \quad 8 \quad 6 \quad 4 \quad 3 \quad 2 \quad 1$$

Sequence of operations: _____

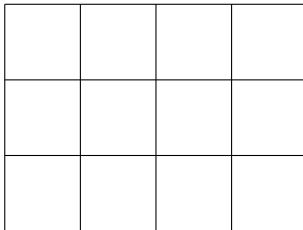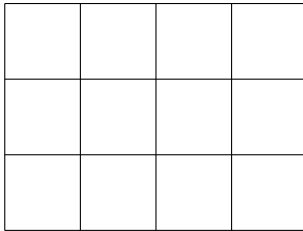## 3. Celebrity Boggle

Enter letters into the given grid so that names of famous Polish people (among the given list) can be spelled out as on a Boggle board: starting from any square in the grid, by jumping in any of the eight directions to a neighboring square each time. A same letter can be used more than once in the same word. In the given list, only the last names in capital letters matter (the first names are only there for your information). Each name has a certain point value (indicated next to it), and your goal is to maximize the total value of the names that can be read in the grid. (Note: the value of each word is its point value in French Scrabble.)

Score: $N - 75$, where N is the total value of the words that can be read in the grid plus the number of squares left blank in the grid.

Stefan BANACH (13)
Zbigniew BRZEZINSKI (39)
Fryderyk CHOPIN (13)
Nicolaus COPERNICUS (16)
Wojciech JARUZELSKI (35)
Lech KACZYNSKI (47)
Stanislaw LEM (4)
Tamara de LEMPICKA (22)
Krzysztof PENDERECKI (24)
Roman POLANSKI (19)
Henryk SIENKIEWICZ (40)
Maria SKLODOWSKA (38)
Jan SZCZEPANIK (41)
Wislawa SZYMBORSKA (40)
Andrzej WAJDA (22)
Lech WALESA (15)
Stanislaw WITKIEWICZ (48)
Karol WOJTYLA (32)